s18QUIZ: EXP LOG (SLTN v239)
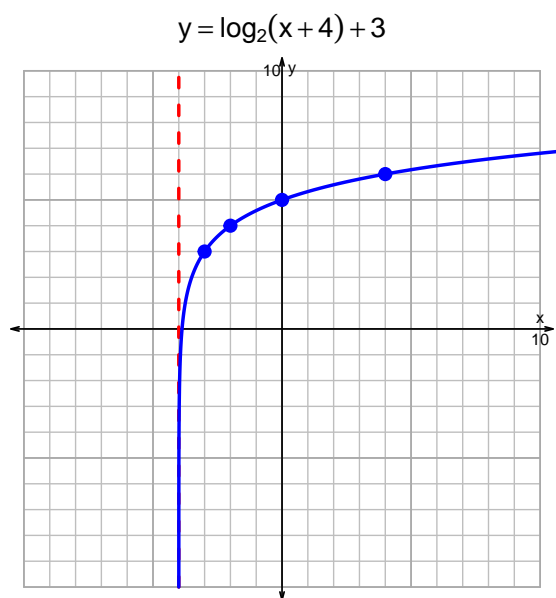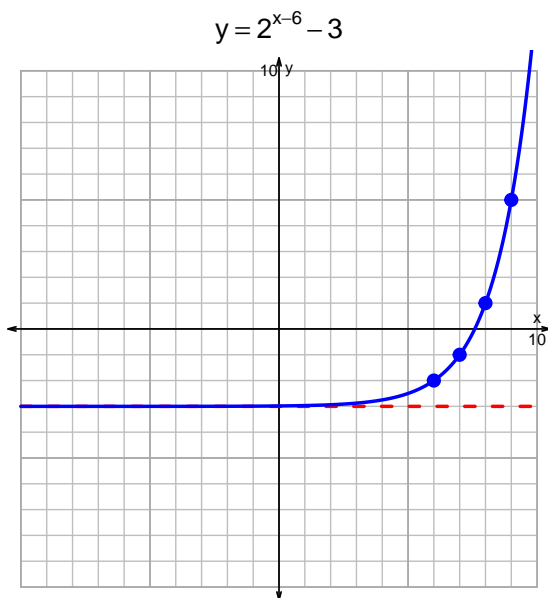
1. Graph $y = 2^{x-6} - 3$ and $y = \log_2(x+4) + 3$ on the grids below. Also, draw any asymptotes with dotted lines.

$y = 2^{x-6} - 3$

$y = \log_2(x+4) + 3$

2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$19 = \left(\frac{3}{4}\right) \cdot 2^{-7t/5}$$

Divide both sides by $\frac{3}{4}$.

$$\frac{19 \cdot 4}{3} = 2^{-7t/5}$$

Take log, base 2, of both sides.

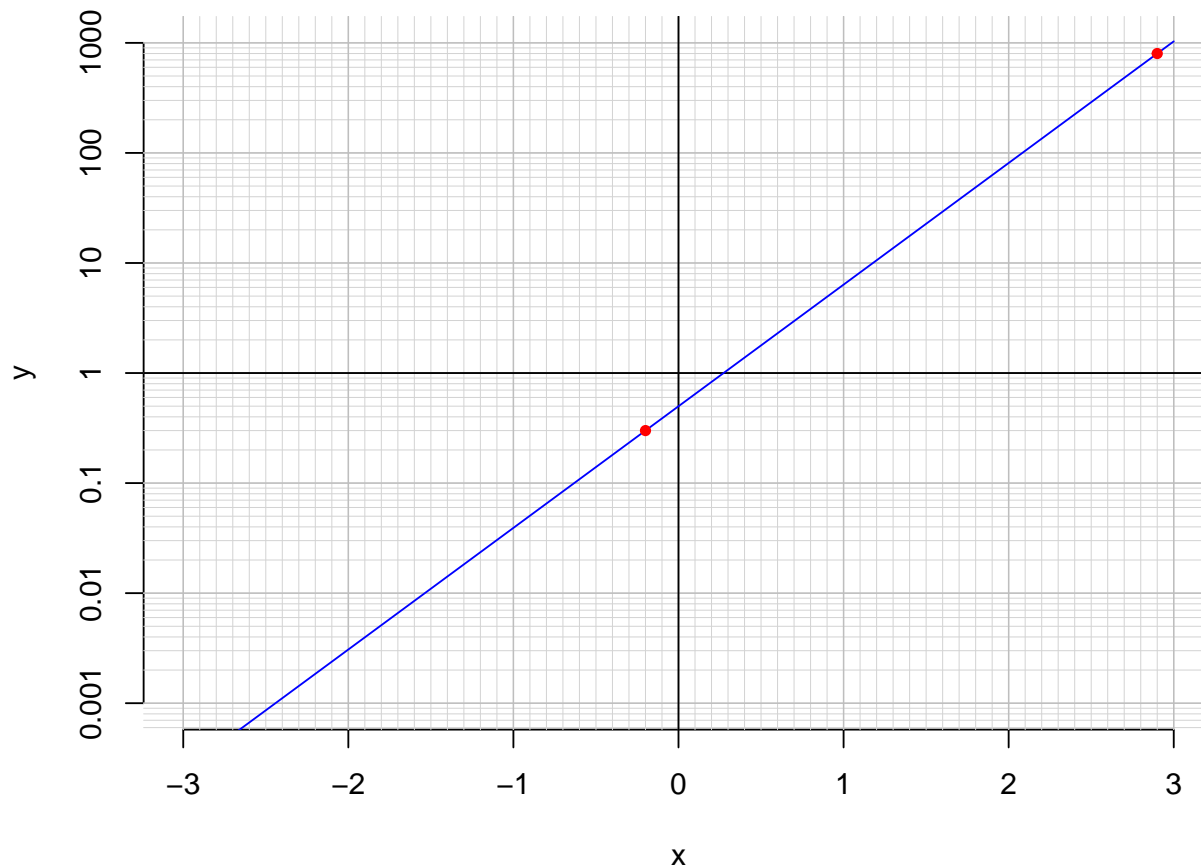$$\log_2\left(\frac{19 \cdot 4}{3}\right) = \frac{-7t}{5}$$

Divide both sides by $\frac{-7}{5}$.

$$\frac{-5}{7} \cdot \log_2\left(\frac{19 \cdot 4}{3}\right) = t$$

Switch sides.

$$t = \frac{-5}{7} \cdot \log_2\left(\frac{19 \cdot 4}{3}\right)$$

3. An exponential function $f(x) = 0.499 \cdot e^{2.54x}$ is graphed below on a semi-log plot.

a. Using the plot above, evaluate $f(-0.2)$.

$$f(-0.2) = 0.3$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{2.54} \cdot \ln\left(\frac{x}{0.499}\right)$$

c. Using the plot above, evaluate $f^{-1}(800)$.

$$f^{-1}(800) = 2.9$$